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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and im rove the character of the service rendered to the public.

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WINTER LAKE NAVIGATION.

Capt. C. S. Baker, of West Superior, sprung the following scheme on a reporter for a daily paper of that city, a few afternoons since:

"I have just paid," said he, "$102.65 freight on a carload of 18 tons of iron from here to Chicago. It would not have cost me more than $28, or about $1.50 per ton to send it by water. We might just as well have lake navigation all the year around. There is lots of commerce here, lots of shipping; the only question is, who will pay the expenses?

"One ice crusher, like the Ste. Marie, which operates at Mackinac Straits, could keep all Lake Superior open and the cost of operating the boat would be small, compared with the immense amounts saved on freight. I don't believe we would be obliged to take care of more than one boat at the head of the lake and the shippers of Superior and Duluth could very easily stand the small expense, which would be a mere drop in the bucket compared with what would be saved. The only reason our flour mills and other industries shut down is because the lake navigation has stopped. Open the way between here and Buffalo and they will run all winter and the incidental good the head of the lakes would come in for can be figured upon.

"Naturally every port would take care of its own crusher; the straits, as well as all other points, are kept open as it is. If the men at the head of the lake will get together and co-operate in this matter, the scheme would, of course, prove successful and a good round sum would be turned back every year, besides paying expenses. In this manner the shippers would only be taxed the exact cost.

"It is simply a matter of saving a couple of hundred per cent. on every ton shipped by water. The ice rarely freezes in the lake before February 1; it didn't this winter, which was exceptionally cold. A little co-operation and animation among the shippers will do the trick."

A NEW PATENT ANCHOR.

Shipowners, seamen and underwriters fully understand the value of good and reliable ground tackle, and in consequence of the importance of the question various kinds of anchors have been produced, each, of course, claiming advantage over previous and other types. There is considerable merit in the majority of them, and all interested must come to the conclusion that the patent anchors are far superior in holding and in handling to the old-fashioned wooden stocked anchor now going out of date. J. Muirhead, of Glasgow, has patented a device for locking the shank at an angle with the flukes, so that when locked the flukes offer the greatest resistance and "grips," most effectively. This does away with the necessity for trippers, and the anchor when not in use lies flat on deck or can be hove up into the hawse pipe. It is said that when the strain comes on an ordinary "tripper" patent anchor the trippers bear 75 per cent. of the whole weight of the anchor and the toes 25 per cent., while with the locking device the whole weight is borne by the toe. Thus the tendency to "bite" is three times greater than that of the tripped type, and equal to that of the stocked anchor, with the advantage of having both flukes holding. Other advantages claimed are strength, (being manufactured of hammered steel), perfect simplicity, and cost, the price being little in excess of the ordinary anchor.

THE NAVAL WAR COLLEGE AND ITS WORK.

None of the many interesting features presented at the United States Naval Station at Newport, Rhode Island, is more notable than the past season's work of the War College. In an article contained in the current issue of *Harper's Weekly* it is stated that this college is now just a decade old. which has already proved itself so valuable that some foreign governments have asked permission to avail themselves of its privileges, and Germany, Russia and Sweden have copied it in similar institutions of their own. It has, nevertheless, been a most difficult and discouraging task to bring it forward against the many embarrassments that beset the development of all new ideas. The days of doubt and distress are probably behind it, however, and with a new building and the work of the last two seasons to show for it, its permanence and growth may be assured.

Complete preparedness against all probable contingencies is the ultimate aim of this institution; and in the absence of the American General Staff, naval officers are here to determine beforehand what an enemy must or would be likely to do in attacking us by sea, and what, under each set of circumstances, is the best way to repel him.

It was with this practical service to the government in view that the problem of last year was made one of naval action in winter along our coast from Sandy Hook to Cape Cod.

Several great charts of the region were prepared. One was hung in the office of the president, the others in the committee rooms. In each of these rooms gathered groups of officers supplied with little pawns representing the number of battle-ships, rams, cruisers, torpedo boats, and other craft, which we might be supposed to be able to gather in the autumn on six weeks' notice, with an enemy twice as numerous approaching. By the aid of these pawns each officer or group of officers works out an independent solution, which is submitted and discussed toward the end of the season.

It is only in this way that the experience and knowledge of the best men can become available to their successors and to the whole people, and this is what the War College is doing. Its faculty and its students have been studying the field of their problem with reference to all these things, and their combined investigations are plotted upon one map.

INTERESTING CANADIAN ADMIRALTY DECISION.

An interesting case was tried some time ago in the Toronto admiralty district of the exchequer court of Canada. The case was one in which George Sylvester, of Chatham, sued the tug Gordon Gauthier for $235 wages as engineer. The action was defended by O. E. Fleming, of Windsor, and the Third National Bank of Detroit. Mr. Fleming claimed ownership under a bill of sale made to him as trustee for the creditors of the owner, S. T. Reeves. The Third National Bank are mortgagees of the tug. Both defendants claimed to be subsequent purchasers, and as the action had not been brought within the ninety days required by the maritime court act they contended the wages could not be collected from them. Judgment was handed out by his Lordship J. E. McDougall, who decided that the defendant Fleming, as assignee or trustee for the benefit of creditors, is in the same position as the debtor Reeves, and can only claim such rights as Reeves could at the date of the execution of his deed of trust, and that the plaintiff being clearly entitled to a lien against the vessel for his wages as against Reeves, Fleming can only make claim to the ownership of the ship subject to this lien. The learned judge further decided that the Third National Bank, who had taken possession under their mortgage before the institution of the action, cannot be considered as a subsequent purchaser within the meaning of the act. Judgment was given for plaintiff for $233 and costs, and a sale of the vessel directed unless amount of judgment and costs are paid within twenty days

NEWS AROUND THE LAKES.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

C. R. Jones, the well-known Cleveland vessel broker, and C. H. Tucker, agent at Cleveland for the Northern Steamship Co., were in Buffalo this week.

There is a report that the Western Transit line has chartered the steamers Gratwick and Gilbert again, but at only seventy-five cents a ton. Last season's rate was generally eighty-five.

The annual report of the American Steel Barge Co., gives the capital at $4,000,000. The liabilities are $1,656,588.64, of which $1,600,000 is bonded indebtedness, and the assets are $3,000,000.

Buffalo harbor was scarcely ever so completely frozen up as during the late cold weather. The fire boats made shorter and shorter trips every day, and harbor tugs have been unable to do anything.

A report is current here that J. C. Fitzpatrick will sever his connection with the vessel brokerage firm of A. Clark & Co., and move to Cleveland to take charge of the *Marine Review*, a weekly paper, in which he has held the controlling interest for some time past.

The resolutions passed this week by the Merchants' Exchange, approving the new shoveling arrangements have virtually put an end to the objections of the boss scoopers. In reality the move was aimed at the grain receivers, who are much harder hit than the boss scoopers.

General Manager, Washington Bullard, of the Union Steamboat Co., and Mr. Paul W. Bullard will sail from New York next Saturday on the steamship Concho for Galveston, Texas, and will probably return on the same vessel in about three weeks. Mr. W. Bullard takes the trip for health considerations.

Deputy U. S. Marshal Kane has received an order from the court directing him to sell the steamers Pearl and Gazelle, owned by the Crystal Beach Steamboat & Ferry Co., under a libel filed by H. K. Wick & Co., to recover on a coal bill of $26,039.80. Other libels on the boats amount to more than this sum, and it is not expected that $30,000 will be realized on both at forced sale.

The appointment of the committee of canal boat owners from New York, who will meet with the local owners, was approved at a meeting held in New York Wednesday. As soon as notice of the ratification is received here, the date for the meeting to discuss rates will be held. People here feel certain that Governor Morton will sign the $9,000,000 canal improvement bill as soon as he is satisfied that it is properly drawn in all respects.

Major Ruffner, United States Engineer, is waiting for a board of Government engineers to visit Buffalo and pass on the proposed plans for extending the breakwater. As soon as the plans are perfected Maj. Ruffner will continue the work. He has quite a sum of money at his command and as soon as work begins on the structure, some idea of the amount needed for completing the breakwater can be computed and will then be put in the new river and harbor bill.

The negotiations between the Union Transit Co. and the Crescent Transportation Co., by which all the steamers of the latter line were finally chartered to the former, only came to a head this week, although the deal has been understood generally since early in the winter. The steamers John V. Moran, James Fisk, Jr., John M. Nicol, Eber Ward, and W. H. Stevens, have all been taken by the Union Line, and will probably go into the Lake Superior trade. There have been many rumors regarding the Union Line's intentions, and the Menominee boats were at one time mentioned, although they have no gangway. The little steamer S. F. Hodge was the only one left out of the deal, and she will doubtless find work on a shorter route. It is not probable that the Crescent Line will again appear in the lake carrying trade.

CLEVELAND, O.

Special Correspondence to The Marine Record.

Capt. Thos. Wilson is expected back from his southern tour in a few days.

It is rumored that another large steel towbarge will be added to the Corrigan fleet.

The newly organized Lake Pilots' Association has applied to the Secretary of State for a charter.

Two strakes of extra plating are to be placed on the steamer J. H. Wade, on and just below the sheers trake.

A contract for the construction of a handsome new passenger steamer for the B. & C. Line is likely to be placed before the date of our next issue.

Capt. Cummings, who has been away for a few weeks on an eastern tour, accompanied by his wife, has returned feeling much improved after his enjoyable vacation.

A committee of the Lake Carriers' Association is engaged in securing lower rates for handling lumber at Lake Superior ports. The freight on lumber is likely to be lower this season than ever before and loading charges will have to stand its share of the reduction.

The card of distances got out by Frank Morrison, compass adjuster and manufacturer of nautical instruments, 81 River street, is meeting with considerable favor among vessel men, as a handy ready-reckoner and coast pilot. The corrected compass courses are given between the principal points as well as the distances in statute miles.

Maj. W. B. Stockman, local forecast official of the Weather Bureau, addressed the Shipmasters' Association on Wednesday on "Storm Movements." He gave some very interesting demonstrations, showing the movement of cyclonic and anti-cyclonic winds, and exhibited a series of semi-daily storm bulletins showing the movements of the hurricane of October 10-14, 1893, in which the steamers Wococken and Dean Richmond foundered in Lake Erie, with great loss of life. He also, in the same manner, traced the meanderings of the great storm which wrecked so many craft on Lakes Michigan and Huron last May. Next Wednesday's informal talk will be on the new articles introduced in the revised pilot rules. For the following Wednesday, Mr. Robert Logan will deliver an address upon marine architecture and construction.

DETROIT, MICH.

Special Correspondence to The Marine Record.

Dr. F. B. McCormick, collector of customs on Pelee Island, who was suspended last summer as a result of certain fishing boat seizures on Lake Erie, has been honorably reinstated.

At a recent meeting Detroit Lodge No. 7, of the Shipmasters' Association, adopted resolutions heartily endorsing Supervising Inspector General James A. Dumont. A copy of the resolutions was sent to Gen-Dumont, who said in reply: "Please accept my thanks for your thoughtful action, the spirit of which is, I assure you, appreciated. The recent wholly unwarranted attacks upon my official character, far from being a source of uneasiness to me, have brought me much pleasure, since they have called forth the sympathy and approval of those whose interests have been placed in my charge."

Supervising Inspector Galwey's report of the inspections in the Eighth District during 1894, shows that in the Detroit local district there were inspected 167 steam vessels; in Chicago, 231; Grand Haven, 181; Marquette, 108; Milwaukee, 241; Port Huron, 193. During the year there were built at Detroit 10 steam vessels, in Chicago 13, Grand Haven 17, Marquette two, Milwaukee 17, Port Huron 17. Four steam vessels passed out of service at Grand Haven, two at Port Huron, one at Detroit, and one at Milwaukee. Masters' and pilots' papers were issued as follows: Detroit 273, Chicago 265, Grand Haven 108, Marquette 68, Milwaukee 214, Port Huron 295. There were issued chief engineers' papers at Detroit 250, Chicago 340, Grand Haven 190, Marquette 123, Milwaukee 214, Port Huron 314.

MILWAUKEE, WIS.

Special Correspondence to The Marine Record.

The estate of the late Thomas Davidson is valued at $225,000.

While on the boxes at the west yard the present wheel of the tug William H. Simpson, will be exchanged for one of finer lead.

D. W. Chipman, United States local inspector, of boilers, had the misfortune to dislocate one of his ankles a few days since and will therefore be confined to his house for some time.

It is stated that the Pabst Co., has plans laid for a line of steamers between here and Chicago. The project only awaits the sanction of Capt. Fred Pabst himself, who is now in Europe.

It is reported from St. Joseph, Mich., that the steamer Petoskey, which has been icebound since early in January, has at last succeeded in working her way through the ice. She has a large general cargo.

Capt. Ole Hanson has returned from Chicago after disposing of $26,000 bushels of potatoes which constituted the late full cargoes of the schooners Alice and J. V. Jones. The venture resulted in a fair profit.

The mishap to the car ferry steamer Ann Arbor, No. 1, at Manistee, turns out to be precisely similar to that of her sister steamer No. 2, at Frankfort, in December. Her port outboard shaft at the stern broke and was lost, together with the wheel. The damage will have to be repaired at Chicago.

Milwaukee is to have at least one new yacht next season. She will be named the Trilby and is a 35-footer, and is building at Louis Larsen's yard on Jones Island. Her owners, expect to make it lively for the Viola next summer. The Viola has never been beaten on the lakes by any boat of her class.

Record has been made at the Milwaukee customs office of the sale of a one-eighth interest in the schooner Lydia E. Raesser, by Oley Groh to William Lorenz, of Sheboygan, for $400; also of the sale of the tug M. A. Knapp, by the Leathem & Smith Towing & Wrecking Co. to Albert Kalmbach, George S. Wilson and Lloyd Baker, for $2,000.

The steamer Nyack, on a run across the lake from Milwaukee last Thursday morning, had a wild race with a storm which was announced here just after she had departed. The storm was a blizzard and, seeing it approach, every effort was put forth to reach Muskegon Harbor, which was accomplished only a few minutes before the storm broke.

The new tug Zenith, building at Benton Harbor, Mich., for Capt. Singer, of Ashland, is a fine little steamer. She is 95 ft. long, by 20 ft. beam and 12 ft. depth. Her fore and aft compound engines are being built at the Montague Iron Works. The cylinders will be 18 and 36 inch in diameter, by 30 inches stroke. Her boiler is 9x14 ft. and her wheel 9 ft. in diameter. Her coal bunkers carry forty tons of fuel, and she is expected to make 14 miles an hour at ordinary speed.

The steamer Fred Pabst left the Milwaukee dry dock Saturday night, after receiving thorough repairs of the damage sustained by getting on the rocks near Sailors' Encampment last fall. She received a new rudder, new sternpost, and some new keel, garboards and bottom planking aft. The greatest damage, however, was the strain put upon the hull by the St. Mary's river current while the steamer lay athwart the channel. To overcome this it was necessary to introduce an additional shelf-piece and heavy steel chord on each side from the after end of the boiler house to the stern, a distance of 64 feet. Thorough refastening of the after part of the craft and recalking throughout were also necessary. The repair bill and dry dock charges were nearly $15,000, and a $2,000 wrecking and towing bill added to the incidental expenses of transferring the coal consignment from Duluth to Milwaukee parties, brings the total up close to $18,000.

PORT HURON, MICH.

Special Correspondence to The Marine Record.

The Pawnee has finished her repairs at the dry dock.

The steamer Mary begins Monday, Feb. 26, to make regular trips to Algonac, leaving here at 3 p. m., local time.

There is ice as far as the eye can see in Lake Huron, and it is still very cold at night, but warms up during the day.

Inspectors Danger and Van Lien are becoming rather busy men as spring approaches, issuing licenses to captains, pilots and engineers.

Crockett McElvoy, managing owner of the Unique, is doing all he can to aid the supreme judgship boom of Judge Moore, his business associate.

The Kittie M. Forbes has been entirely rebuilt forward where she was damaged by fire at Duluth last fall. She will have only one mast this coming season.

Young river pirates are bothering vessel owners a good deal this winter. Boys entered the cabins of the Magnet and Leonora and carried away everything moveable.

The Monahansett, Madagascar, Byron Whitaker and W. F. Sanborn have discharged their cargoes of corn. The next to be unloaded will be the Geo. Stone and Nicaragua.

The tug Jim Puller is in the Wolverine dry dock, hav-

ing new bed plate put in to receive her new engine. It is expected that she will be able, when she gets this engine, to pull Cram's big dredge out of the rapids here to the lake where they are at work.

Capt. S. H. Burnham says there is probably more than 2,000,000 acres of solid ice on Lake Huron, or enough to fill St. Clair River with a steady run for two years. This looks like a late opening, for which most vessel men profess to be hopeful. The river is now clear of ice down to Algonac, but Lake St. Clair is frozen pretty solid.

The lumber business is looking very blue. The owners of the lumber fleet from this port are making a great hustle to find work for their boats this coming season. There is none of them that is sure of a steady business. Parties on Lake Michigan are making inquiries to place boats in the lumber trade down here, saying there is nothing there for them.

DULUTH AND WEST SUPERIOR.

Special Correspondence to The Marine Record.

Mr. A. L. Evans, now agent at Minneapolis and St. Paul, has been appointed agent of the Western Transit Co. here, to succeed Capt. A. B. Wolvin, resigned.

The Philadelphia & Reading Coal Co. is figuring on getting in on the Duluth side of the bay, and when the Ohio Coal Co.'s lease of the Sargent dock expires in the spring, it will begin operations in Duluth by taking hold of the vacated dock.

During the coming season the steamer S. B Barker will make three trips weekly between Duluth, Isle Royale and Port Arthur. The place of the Barker on the south shore route, between Duluth and Ashland, will be filled by the steamer Hunter.

Whitney Bros., of West Superior, have secured the contract for building a large lumber dock for the St. Louis Lumber Co., in West Duluth, just above the railway bridge. This important addition is really two docks, each 1,000 feet long by 90 and 48 feet wide, respectively.

A bill introduced by Senator Mills is pending in the Wisconsin legislature, which favors the sawmills of this state by imposing a tax on all logs cut in the state and delivered outside the state to be worked up. The same gentleman has introduced a bill providing that the elevators located in Superior shall be public warehouses.

ASHTABULA O.

Special Correspondence to The Marine Record.

Ore orders for shipments to the furnaces are steadily increasing. Two more Brown hoists have been set to work loading cars, and it is expected that the ore will be well cleared off the docks before Lake Superior navigation opens.

A number of changes are being made by the P., Y. & A. and Lake Shore docks in preparation for the large new coal loading machines to be erected here in the spring.

NOTES.

THE Bath (Me.) Iron Works has contracted to build a 200-ton steamer for the Maine Coast Navigation Co. The new steamer is to be a propeller, about 130 feet long, and will have a Scotch boiler and triple expansion engines.

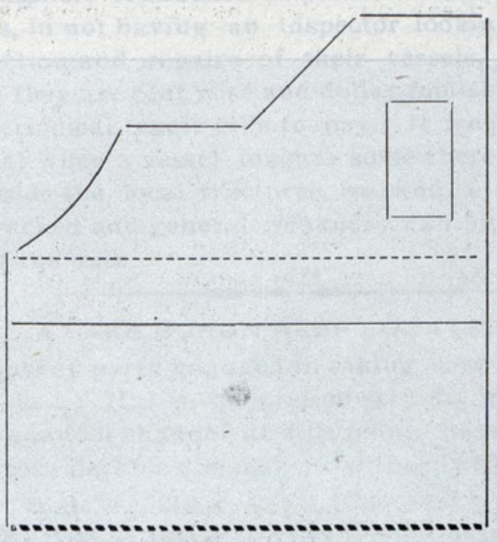
THE Mahoning Valley Iron Co., at Youngstown, O., has resumed operations in the entire plant with the exception of the plate mill. The work of relining the Hannah blast furnace is nearly completed, and it will be ready to have the fires lighted March 1.

A MOVEMENT is on foot at Bucyrus, O., to organize a local stock company for the purpose of manufacturing steam dredges and shovels. It is proposed to organize with a capital stock of $100,000, and to purchase the old works of the Bucyrus Steam Shovel & Dredge Co.

THE Vulcan Iron Works, of Chicago, have just finished the heavy machinery for the rolling lift bridge now being erected at Van Buren street, over the Chicago River, for the Metropolitan Elevated Railroad. This work includes 165 tons of steel castings which were made by the Midvale Steel Co. The firm has also just completed the manufacture of three large Vulcan-Nasmyth steam pile hammers, one of each to go to New Orleans, Detroit, and Sioux City, Ia.

CONCRETE BREAKWATER AT MARQUETTE.

Important alterations are to be made in the construction of the harbor breakwater at Marquette, Mich. The present structure is to be changed in form from an ordinary square structure rising six feet above the water level to one with a concave face on the lake side and a vertical face on the harbor side. The lake exposure of the structure will comprise two inclined planes. The first of these planes will be slightly concaved, the effect of which will be to turn the seas back upon themselves as they roll up against the breakwater, and thus very materially diminish the force of their impact, a force which, during a northwest gale three years ago, proved almost disastrous to the breakwater and necessitated an expenditure of $20,000 for repairs. The improvement involves the cutting away of the present cribs at 18 inches below the mean level of the lake. Upon the platform thus obtained will be built a top of concrete of peculiar shape. From the water level on the lake side



the concrete will rise at an angle of about 30 degrees. Then will come a flat surface about eight feet wide. Then there will be another and somewhat sharper rise to the top and then another flat portion about six feet wide. This inner crest will be not less than ten feet above the water of the harbor. Through this crest will be formed a tunnel or passage to the lighthouse on the outer end of the breakwater. A general idea of the appearance of the breakwater may be obtained from the accompanying cross-section diagram. In this the lower dotted line represents the bed of the lake and the upper dotted line the water level. The transverse black line indicates the bottom of the concrete, the irregular line the slopes and the levels of the top and the rectangular figure the tunnel or passage.

The total cost of the improvement will exceed $100,000, of which there is now $25,000 available to be expended during the coming summer.

The work will not be done by contract, but by the day. Bids for the furnishing of materials, cement, broken stone, etc., will be opened at Duluth this Thursday afternoon.

A SHIPBULDERS' IDEAS.

"In the various comments on the loss of the steamship Elbe and the lessons to be learned therefrom," said one of the best known of the younger shipbuilders on the Atlantic coast last week, "I have failed to find a suggestion of what seems to me to be of great importance. It is that the double bottom which is now built in all our first-class vessels should be extended up the sides of the vessels to the first deck above the water line. The space between the inner and outer skins should be filled, as is done with our men-of-war, with celluloise or some other obturating material, so that in case of collision the rush of the water could be kept out and the chances of sinking lessened.

"The builders of first-class passenger ships have much to learn from the construction of the modern war ships, if they would produce a craft that is a nearer approach to the unsinkable vessel to which all are looking forward. They must also have a drill of their crews several times at sea during a voyage, where every man will know his post and be prepared to do his duty on the instant. The boats should be lowered and preparations made for abandoning ship, such as the crews of the men-of-war go through constantly. Then, in case of a collision, the loss of life will be reduced to a minimum.

"The man-of-war and the first-class passenger ship both have twin screws nowadays. The war ship, however, has an inner and outer skin, and this is not only filled with cellulose, but is subdivided by numerous bulkheads of very light but strong metal. In case of a wound in the hull of the ship, the water will swell the cellulose and the leak be arrested partially. If not too serious, the rush of the water will be stopped entirely. Moreover, the war ship is equipped with leak arresters and collision mats and has numerous life rafts. The life-saving equipment of passenger ships usually consists of a few boats, so tied up and stowed away that they are reached and launched with difficulty. There are no collision mats, and even the means of stopping a burst in an air port is usually lacking. The bulkheads are few and the doors between them almost invariably open.

"Now, if a transatlantic company should make a craft with all the bulkheads solid, as some of them already are, and, in addition, should extend the double bottom up the sides above the water line with numerous subdivisions, each filled with a water absorbent, the extra expense would be a serious matter, but I am sure the traffic attracted thereby would be so large that it would be a paying investment in the long run. I am sure that, had it been known that the Gascogne was equipped in this manner, there would have been very little anxiety as to her safety.

"The only dangers of moment to the large passenger ships of the present day are from fire and collision. They will withstand any storm that the ocean can kick up. There is an enormous amount of inflammable material in passenger boats that does not exist in war ships. The lightest of metal bulkheads, or some material of a woody nature that will not burn easily when coated with uninflammable material, would seem to be the next step in advance to avert danger by fire. If possible, however, there should be no wooden subdivisions in a boat. A craft such as I have indicated would prove a gold mine in earning capacity to her owners. Very little space need be lost to secure these improvements, and the non-sinkable ship would be much nearer at hand."

FLOTSAM, JETSAM, AND LAGAN.

The steamer Nyack was placed in drydock at Chicago Sunday for a new shoe and wheel.

John Pike, a well-known marine engineer, died at St. Joseph, Mich., last Friday, aged 35 years.

Lumbering and logging at several places in Michigan is entirely suspended on account of warm weather.

The Messrs. Hill, of Fish Creek, Wis., are building a fishing tug for the lower lakes, 92 feet long with 22 feet beam.

The schooner Philetus Sawyer is getting a new deck, deck beams, and other repairs at Green Bay, to cost $2,000.

Ice nearly a foot thick has been cut on the Tawas river for the first time in many years. Usually the ice is very thin and never remains for more than a few days.

Folger Bros., who control the Thousand Island Steamboat Co., have ordered a 20-mile side wheeler at Philadelphia, to be known as the Island Rambler, and to cost $85,000.

Supt. Chapman of the ninth district, is arranging to display weather signals at the life-saving station at Marblehead, Fairport, O., Fort Niagara, and Charlotte, New York.

F. W. Wheeler & Co., of West Bay City, have contracted to build a wooden tug for Henry Corgan, of Eagle Harbor. She will be 60 feet keel, 16 feet beam, and 8 feet hold, and is to be finished in June.

The steamer Magnet, belonging to the Richelieu & Ontario Navigation Company's fleet, is being rebuilt, and will have her name changed to the Hamilton. Next season she is to ply between Toronto, Kingston and Montreal.

The President has issued an order suspending until further notice the operation of the proclamation putting into effect on March 1 next, the new rules for the road at sea and to prevent collisions. This applies to salt water only.

Forty lumbering plants in the Saginaw Valley during the last year produced 481,244,000 feet of lumber, which is the smallest output since 1858. The high water mark was reached in 1882, when the output was 1,011,274,905 feet. Since then it has steadily decreased.

THE FIRST "WHALEBACK" STEAMER BUILT ON THE PACIFIC COAST.

(ILLUSTRATED.)

While there are now some forty whaleback vessels, including steamers and tow barges, designed and built by Capt. Alexander McDougall, their inventor and patentee, mostly in service upon the lakes, it was not until this month that the first whaleback steamship built on the Pacific coast went into commission. There was a whaleback steamship built at West Superior, Wis., that shot the rapids of the St. Lawrence, loaded wheat and delivered it in Liverpool, came back to the United States, and then made the voyage through the Magellan straits to Puget Sound—The Charles W. Wetmore—but she afterward went ashore in a fog, and after standing the hard usage of a winter or two, exposed to the fierce storms of the Pacific, she was eventually abandoned, and broke up where she went ashore.

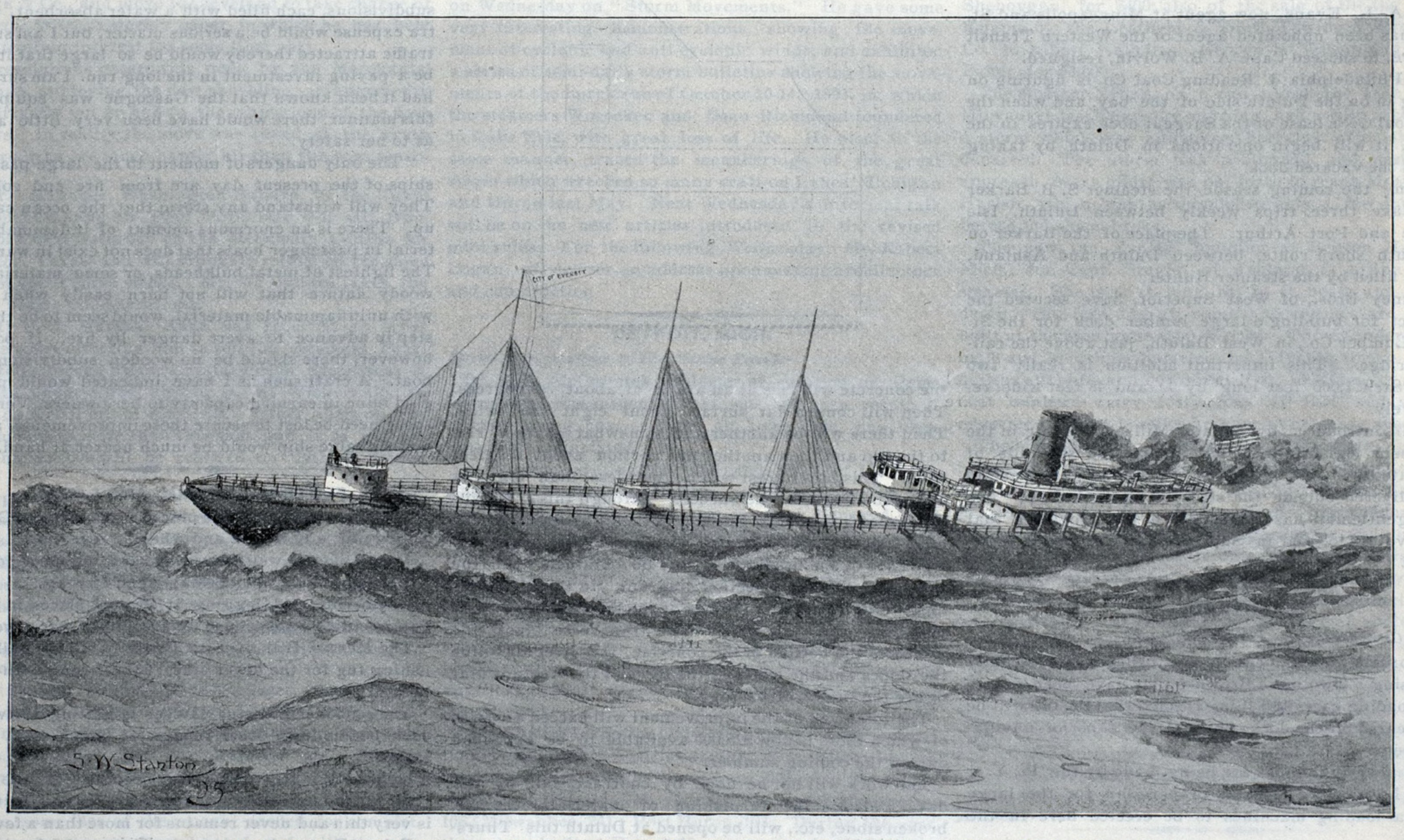
The whaleback steamship City of Everett, illustrated herewith, through the courtesy of *Seaboard*, New York, was built under the supervision of Capt. McDougall, at the Pacific coast shipyard of the American Steel Barge Co., in the new city of Everett. Washington, some thirty miles north of the city of Seattle, on Puget Sound, that great inland sheet of water that is destined to make of the State of Washington one of the greatest maritime states in the Union. The new steamer, shown in the cut, is considered one of the finest freight steamers ever built in America. It is claimed for her that she can carry a ton of cargo further, faster, and cheaper, all combined, than any steamer ever built for long ocean service. She has just received the highest rating by the Bureau Veritas, and is reported to have cost complete, about $300,000. She has now a charter in the coal trade between Puget Sound and San Francisco.

Following are some of the leading dimensions and particulars of the City of Everett: She is 361 feet long over all, 42 feet beam, and 26½ feet moulded depth with a water bottom of 3½ feet. Amidships she has a deep tank which can be utilized either for water ballast, cargo, or storing fuel when going on long voyages. This gives her a total water ballast capacity, for running light, of 1,800 tons, or a total bunker capacity of nearly 1,000 tons.

Her engine, built by the Frontier Iron Works, of Detroit, is a triple expansion, cylinders 24-38 and 64 by 42 inches stroke. The boilers, built by Messrs. Wickes Bros., of Saginaw, Mich., are four in number, and of the Scotch-type. They are 11x11½ feet with corrugated furnaces, and have been constructed for 170 pounds pressure. The arrangement of the masts in the turrets, which also contain steam winches, and the relation these bear to her numerous hatches, gives her very superior facilities for handling by her own steam any class of freight, both cheaply and quickly. But in case of accident to her machinery there can be spread on these masts 6,500 square feet of canvas.

She is fitted with the most modern appliances and lighted with electricity throughout. She has steam steering geer, a steam capstan, and windlass forward, and steam capstan aft; a very complete forced draft system; a patent ejector for ashes.

For a freight ship her lines are very fine and she is so modeled that she can easily steam on an economical basis 12½ knots when loaded to 20 feet with a cargo of 4,200 tons. At present she has ten saloon state-rooms; other of her rooms, however, can very readily be fitted up and utilized for passengers. The idea in her construction has been to make her adaptable to any trade, especially with a view to long voyages such for instance as from the Sound to the west coast ports of Chili and Peru, or to China, Japan, or Australia.



WHALEBACK STEAMSHIP CITY OF EVERETT, BUILT AT EVERETT, WASH.—(FROM SEABOARD.)

IRON AND MINING NOTES.

IT IS considered probable that the Commodore mine may not be worked this year.

A new hoisting engine and eight-foot drum are being put in place at the Lillie mine.

Over 175 men are now at work at the Champion mine, and about 2,000 tons of ore is being mined each week.

The Weston furnace, at Manistique, went out of blast on the 15th inst. to await an improved demand for pig iron.

The Mastodon Mining Co., of the Menominee Range, has contracted wth a number of miners for the mining of a considerable quantity of ore.

It is rumored that the Minnesota Iron Co. is looking after more Mesaba properties, and has secured an option on the Virginia and Shaw properties.

The Lake Superior mine is experiencing much trouble with water, striking a lead last week which drowned the pumps and filled the workings. Larger pumps are being put in at once, and work resumed as quickly as possible.

The Mesaba Chief Co., in the Mesaba Range, has agreed to a proposition for an option by the Penn Iron Co., and will likely be operated by the latter concern. It has been doing some development during the winter and a drill will soon be put at work.

Judge Stevens, of the United States Circuit Court of the western district of Michigan, has directed Special Master Peter White to pay within sixty days from January 29, $3.50 per share to Pewabic stockholders, or $140,000. Mr. White originally received from the sale of the mine $710,000. He has already paid to the stockholders $400,000.

President S. S. Curry, of the Metropolitan Land and Iron Co., at Ironwood. Mich., who was recently quoted in a Milwaukee paper as saying that the iron mining towns and investors in Michigan were facing certain bankruptcy as the result of Mesaba discoveries, is out with a letter declaring the alleged interview false from beginning to end.

The pioneer mine is showing up well, says the Ely *Times*. Capt. Gilbert is now at work on the second diamond drill hole in the 7th level, at a depth of 594 feet. The drill is now in a distance of 302 feet, 68 feet of which is Bessemer ore. As soon as the weather permits the company will begin to set up its large air compressor and put in two large new pumps.

The Mahoning Ore Co. will be ready to ship ore by about July 1, and will not get out as much as has been reported in the local papers. It is not yet definitely determined just what the output will be, but it is not at all likely to go over 300,000 tons. At present there has been stripped an area 1,000 feet by 75 feet, and about 18 feet deep. There are to be four acres stripped this season. There are four 40-acre tracts nearly covered with ore, which is not far from 150 feet deep.

The Pittsburg & Lake Angeline has suspended work in shaft A, of the old mine. Shafts A, C, and D,, ever since work was resumed eight months ago, about 400 men are at work there, and 300 at the East End mine. About 80 men will be laid off by this suspension. The management thinks that the mine is producing too heavily. The shaft A ore is not of so uniformly fine a grade as the rest of the new mine, and the ore does not find so ready a sale. The stock pile room at the old mine is also almost entirely filled up.

CORRESPONDENCE.

☞We do not hold ourselves responsible in any way for the views or opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in THE MARINE RECORD.

CLASSIFICATION SOCIETIES ON THE LAKES.

CLEVELAND, Feb. 20, 1895.

To the Editor of The Marine Record:

I cannot let your article in the issue of the 7th inst. pass unnoticed, and therefore repeat with you the question: "What are Classification Societies doing on the Lakes?" As a naval architect and practical shipbuilder of about twenty years' experience here and in shipyards on the Clyde, England and Ireland, I would make a few comments.

What are classification societies incorporated for? Is it not for the formation, establishment and carrying out of rules governing the construction of hulls, whereby vessels may receive a rating determining their term of service and general seaworthiness and suitability for the trade they are to be engaged in? Is there a society on the lakes at present which fulfill these requirements? The United States Standard Steamship Owners' and Builders' and Underwriters' Association has done considerable business on the lakes lately, but their methods are not very satisfactory or thorough, as they are hampered by various conflicting influences. A midship section is submitted to the society by the builders with the main scantling marked thereon, which invariably is approved of with slight alteration and the work on the hull is proceeded with. During construction the surveyor makes four or five inspections, usually only from a distance, and they are of a very meagre and cursory character. The association referred to has been spoken of as a combination of owners, builders and underwriters, whose interests are not in unity. The builders, in these times of keen competition, will, in looking after their own interests, put as little material and labor into a hull as possible, consequently if we are to have seaworthy vessels on the lakes, we must have practical shipbuilders superintending their construction in the owner's interest in addition to classification with any society. During the season of navigation I could frequently point out vessels which under certain conditions would be sure to meet with trouble when, as you say, at a time that they could not be nursed. What is to be done in the matter?

Let us have a society on the lakes for the classification of vessels, similar to British Lloyds' with the same arbitrary power, independent of shipbuilders, owners, underwriters, etc. All who are familiar with the most modern practice in shipbuilding know that the red book of the U. S. S. O B. & U. Association is practically a copy of Lloyd's rules, and what alterations have been made are not necessarily improvements. The U. S. S. S. O. B. & U. Association is a long way off from having the independence and stamina that Lloyd's have.

With regard to the steamship inspection service, of which a good deal has been said lately, but not enough, let me ask by what rules of reasoning are retired shipmasters appointed inspectors of hulls? It would be just as ludicrous to expect a shipbuilder to navigate a large vessel to and from Duluth, or from New York to Liverpool, as to expect a shipmaster to inspect and supervise the hull of a vessel, after having spent the best part of his life in the study of navigation and nautical affairs. It requires a period of at least ten years' hard work with hammer, chisel and mallet, and a knowledge of naval design and the most complicated calculations that fall to the lot of man, to make a shipbuilder, and consequently I fail to see how masters can be inspectors of hulls and constructive work, except so far as the equipment is concerned. There is no class of men for whom I have more respect and regard than shipmasters, and especially lake men, and we cannot blame them for accepting the appointment if the owners are willing to entrust their interests to them when building new vessels. Are bookkeepers in owners' offices not as competent, if well read in marine work, to look after hulls as masters are, it it were admitted that a practical knowledge of the work is unnecessary? But some may say, Lloyd's, which has been referred to in this article as a successful society, has captains on its list of surveyors. True; but mark the fact, they are men who have at an earlier period graduated from some college of naval architecture and marine engineering before being commissioned in H. M. navy, from which they retired for Lloyd's service. Lloyd's of to-day have no men in their service as surveyors who are not practical shipbuilders or engineers, and each work in their own departments respectively. Why shouldn't our societies, such as they are, be managed just as judiciously? Without being pessimistic, I am inclined to reciprocate the fears entertained by *Seaboard* of 31st ult., regarding our departure to larger vessels built under the present incompetent supervision. As a notable example, take the twin screw steamers Campania and Lucania, built in the great home of the industry. Their departure was not so great from the best practice, and still it has been seen that these vessels have already betrayed signs of structural weakness which has caused a change in the management of the concern that built them. The proposed increase in size of vessels on the lakes is just as marked as in that of the Campania and her predecessors. Representatives of the largest British underwriters' associations who toured this country lately were surprised at the implicit confidence shipowners here reposed in builders, in not having an inspector looking after the construction and repairs of their vessels, and consequently they are cent wise and dollar foolish, by having large periodical repair bills to pay. It frequently happens that when a vessel touches somewhere on the bottom, beside the local fractures, we find a sheerstrake plate cracked and general weakness exhibited in other parts of the hull.

W. J. W.

A LAKE HURON REEF LOCATED.

The survey party engaged in taking soundings at the foot of Lake Huron, as preliminary to work on the twenty-one foot channel at this point, have located a reef of considerable dimensions, with only fifteen feet of water over it, bearing N. by E. from Fort Gratiot light, distance given as just above the Windermere hotel. The reef is in the form of the annexed diagram, with the sharp corner trending away to the north-east. Soundings show about a general 22½ feet all around the reef, and as it is right in the channel, the wonder is expressed that a larger number of casualties and bottom damage has not been reported from the locality, though perhaps the lack of, or inaccurate bearings taken by vessels touching the reef, may partly account for this evident omission. The reef will have to be marked and in the course of making the deep water channel be drilled out and blasted.

LIFE-SAVING SERVICE, 1894.

The following is an abstract of the report of the General Superintendent of the Life-Saving Service:

The establishment embraced at the close of the last fiscal year, 247 stations, 182 being on the Atlantic, 51 on the lakes, 13 on the Pacific, and one at the falls of the Ohio, Louisville, Ky.

The number of disasters to documented vessels within the field of the operations of the service during the year was 380. There were on board these vessels 4,054 persons, of whom 3,993 were saved, and 61 lost. The number of shipwrecked persons who received succor at the stations was 658, to whom 1,501 days' relief in the aggregate was afforded.

The estimated value of the vessels involved in the disasters was $6,913,635, and that of their cargoes $2,976,-975, making a total value of property imperilled $9,890,-610. Of this amount $7,688,170 was saved and $2,202,440 was lost.

The number of vessels totally lost was 91.

In addition to the foregoing, there were during the year 214 casualties to small craft, such as sail boats, row boats, etc., on which there were 467 persons, 460 of whom were saved and seven lost. The property involved in these instances is estimated at $109,810, of which $75,-045 was saved and $34,765 lost. The result of all the disasters within the scope of the service aggregate, therefore, as follows:

Total number of disasters	594
" value of property involved	$10,000,420
" " " " saved	7,763,215
" " " " lost	2,237,205
Total number of persons involved	4,521
" " " " lost	68
" " " " shipwrecked persons succored at stations	658
Total number of days' succor afforded	1,501
Number of vessels totally lost	91

In addition to the number of persons saved from vessels there were 83 others rescued who had fallen from wharves, piers, etc., and who would have perished without the aid of the life-saving crews.

The crews saved without outside assistance 197 vessels, valued with their cargoes at $676,165, and assisted other efforts in saving 109 vessels valued with their cargoes at $2,583,375, making the aggregate number of vessels saved during the year 306, involving $3,259,540.

Assistance of minor importance was rendered to 123 other vessels in distress, and 244 vessels were warned from danger by the signals of the patrolmen.

The above statement shows that the number of disasters within the province of the service was greater and more destructive of vessel property than in any previous year since the introduction of the present system. This fact is due to the large number and extreme violence of the tempests which ravaged both the sea and lake coasts. The reports of the Weather Bureau show that some of those upon the lakes were unequaled in fury by any of which it had previous record, while several on the Atlantic were among the fiercest ever known. Notwithstanding these extraordinarily adverse conditions, were it not for the fact that two vessels, the ship Jason and the bark Bellmont, were totally destroyed within 15 minutes from the time of striking, thereby excluding the possibility of rescue by the life-saving crews, the loss of life would have been quite as small as usual. Thirty persons out of the thirty-four on board these two vessels were lost.

The cost of the maintenance of the service during the year was $1,258,221.24.

The following is a summary of the statistics of the service from the introduction of the present system in 1871 to the close of the fiscal year:

Total number of disasters	7,625
" value of vessels	$84,922,075
" " " cargoes	38,039,774
" " " property involved	122,961,849
" " " " saved	93,155,522
" " " " lost	29,806,327
" number of persons involved	61,422
" " " lives lost	724
" " " persons succored	11,221
" " " days' succor afforded	28,148

Two stations that were in process of construction when the last annual report was made, have been completed and put in operation—one at Ashtabula, O, and one between Point Lobos and Point San Pedro, Cal. Two others have been built during the year and are now receiving their equipment—one at Duluth, Minn., and one at Portsmouth, N. C. A new station authorized to be located on Seven Mile Beach, N. J., is now under construction and approaching completion. During the year two old stations have been rebuilt—one at Cahoon's Hollow, on Cape Cod, Mass., to replace the building destroyed by fire February 25, 1893, and one at Spermaceti Cove, near Sandy Hook, N. J., to take the place of an old one built many years ago, and which stood within the range of the heavy guns on the proving grounds of the Ordnance Department, and was not worth removing.

The diversion of the main ship channel at Charleston harbor, South Carolina, from the vicinity of Morris Island to that of Sullivan's Island, rendered the station at Morris Island too remote to afford prompt assistance in case of disaster to vessels passing through the present channel, and therefore the secretary was authorized by act of Congress of March 14, 1894, either to transfer the old station to Sullivan's Island or build a new one there, as should seem to be for the best interests of the government. The latter course was found to be advisable, and was adopted. The new station is located on a site donated by the town of Moultrieville, and is nearly ready for occupancy.

During the past year the telephone lines of the service have proved more emphatically than ever before their indispensable value as an aid to prompt and efficient life-saving operations. On every necessary occasion, two or more crews have been assembled by this ready means of communication between stations, and whenever needed, tugs and other aids to the shipwrecked, have been summoned without delay. The lines have been extended and improved as much as possible.

The system continues to attract foreign attention, and during the past year the details of its operation have been examined in person by the representative of a royal commission of Great Britain, who treats of it in his report with warm commendation and recommends its adoption in his own country.

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WESTERN CANAL SERVICE.

Laying aside for the present the several projects already well ventilated, to facilitate interlake and interstate commerce through the medium of canals, beginning at the headwaters of the Mississippi and crossing in various directions through United States as well as Canadian territory to the limits of lake navigation, attention may be turned at this time to the recent bill passed by the Assembly and almost certain of being approved of by the New York state Senate, authorizing the appropriation of nine millions of dollars to secure an increased depth of two feet of water in the Erie Canal, or making the general depth from seven to nine feet. There can be no doubt but that the investment of the above amount, or even treble the sum, should the desired improvements require it, would be amply repaid to the state in the course of a few seasons' traffic, in fact, it has been estimated by competent authority, that the benefits accruing from a nine feet draft would in one year alone repay a nine million dollar outlay. This statement may sound somewhat wide of the mark, but when it is considered that one firm of forwarders on the lakes has already organizing a company to build a fleet of eighteen light draft steel vessels for the lake and Erie Canal traffic, and that the increased draft would permit the present canal fleet to carry four times the quantity of cargo each season, an estimate of the growing commerce which a nine feet draft would insure is soon made apparent. Furthermore, we may point out the value of the canal now even in its present state, by comparing the value of commerce entering in and clearing from the Cuyahoga district, embracing the several lake ports of Cleveland, Ashtabula, Conneaut, Fairport, and Lorain, with that of the canal trade for the same period during 1894. The season value of commerce for the five ports mentioned amounted in round figures to fifty-five millions of dollars, and for the Erie Canal it is placed at upwards of ninety-three millions of dollars, a showing which but few could believe, although the grain shipments alone aggregated nearly forty-eight and a half millions of bushels.

After the legislature of New York has dealt with the question of improving the Erie Canal and decided in the affirmative, pledging the credit of the state to meet the outlay, their action will require to be submitted to a vote of the citizens of the state at a general election to ratify or annul the proceedings of the legislature, and it would appear suicidal to their commercial welfare if a majority of the citizens refused to incur the expense of improving their most valuable highway, thereby not only injuring the state, but showing in a marked manner the fallacies of state control over what is, from a commercial standpoint, a distinctively national waterway. However, there can be little fear but that the people of the State of New York will be only too eager to hold the traffic supremacy which they now enjoy, and will vote for the improvements. Certain it is, that if the waterway had been under federal jurisdiction, many millions of dollars would have been spent on regular improvements as the exigency of traffic demanded.

Speaking directly to the point on this subject, the Hon. E. C. O'Brien, late U. S. Commissioner of Navigation, is quoted as saying:

"The city and the state of New York have a greater interest at stake than any other city or state in the union. The United States customs district of New York collected during the fiscal year ending June 30, 1893, nearly 70 per cent of the total duty collected on imported merchandise of the United States, and shipped over 40 per cent of our total exports for the same year. New York has 28 1-10 per cent of the total tonnage, 38 per cent of the Atlantic and Gulf coast tonnage, 23 per cent of the lake tonnage, 27 7-10 per cent of the total steam tonnage, 46 5-8 per cent of the steam tonnage on the Atlantic and Gulf coast, and 19 1-3 per cent of the steam tonnage on the lakes. New York has 3 1-6 times as much tonnage as Michigan, more tonnage than floats on the Great Lakes, and almost as much as any other four states."

With an even nine feet of water and an improved system of propelling canal vessels, a fair balance, if not the major portion of traffic, may be diverted for a few years yet from the Welland and St. Lawrence Canal routes, notwithstanding the latter will soon command a fourteen feet draft.

The Dominion of Canada has alrerdy spent over sixty millions of dollars in canals. and is still engaged in improvements likely to court traffic via the St. Lawrence as against the Hudson, and this is likely to be felt two years hence when the weakest link in the chain, viz. the Soulanges Canal, on the St. Lawrence system, is deepened from nine to fourteen feet. Besides this, in 1897, the port of Montreal will be in a position to record a thirty thirty feet depth of water, and from that point a clear fourteen feet through the shoalest places to the head of lake navigation. This draft, however, will not permit of carrying ocean cargoes without trans-shipment, any more than the nine feet draft of water in the Erie Canal would, but it does point out a cheaper route of transportation owing to the larger class of vessels which the deeper St. Lawrence canals will be able to accommodate, and a slight saving in distance traversed, as Montreal is nearer Duluth and also Liverpool than New York is, all of which goes to show that adequate and prompt measures need to be entered into to hold the balance of traffic on the American side and via the Erie Canal, for, in the natural course of events many years must yet elapse before a deeper waterway to the coast than is contemplated in the Erie Canal improvements will be completed in American territory.

THE NEW "RULES OF THE ROAD."

AGAIN are we placed under the "painful necessity" of calling the supervising inspector-general of steamboats to time for not attending to a weak link in the chain of his administration. The "rules of the road," embodied in what is known as the White bill, will come into effect on the opening of navigation on the lakes, and the old rules with their idiotic diagrams are not now, nor will they ever be in the future applicable to lake navigation; yet the "big chief" has been granting licenses every day throughout the country, to men who are not versed in the steering and sailing rules under which they must be guided when navigation opens. It is begging the question to say that the new rules were not to take effect until March 1, and until that time he had not the authority to ask for their observance. They will not be practically in force anyway on the lakes until after April 1, notwithstanding the favorable action of Congress and the President several weeks ago, nor will the holders of original licenses issued during the interval take effect until that time. The clear duty of the supervising inspector-general of steamboats was to circularize his entire force immediately on the passage of the White bill, directing that all candidates for original licenses must show a proficiency in the new rules before papers could be granted to them. As it is, hundreds of licensed officers will take charge of a deck and be anything but "all there" in the new rules of the road, and this the shipmasters who framed the code will learn to their anxiety and perhaps sorrow. What has the head of the department meant anyway? Was the idea to show through early and frequent collisions that the former fosilized rules were safer than the new code? If such was the intention, he has taken the best means to bring it about. Of course, we didn't expect that the law would be retroactive, and that before a local inspector would reissue a license certifying to the qualifications and competency of the holder thereof, that he would dance him around in every possible case of meeting, passing and crossing positions, whether by day or night, in which vessels, sail or steam, might be involved under the new rules. All the local inspector may do is to reissue the annual certificate of competency, whether the applicant had ever glanced at the articles contained in the new rules or not, and there are many who have paid but scant attention to them. However, "everything goes!" and we all may learn the custom in time; besides, if a man got a vessel over the ground last season he certainly can this. The majority of experienced shipmasters at each port had a voice in accepting the language of the articles contained in the anything but original White bill. How about the others? Pilots had no say so in the matter at all, and now what do they know about it? Well! the greater anxiety and watchfulness must rest with those who are conversant with each detail of action, they should insist upon their officers cers learning every word of the new code from rule 15 to 28, and strictly uphold their right of way or movement at all times,even when others not so well informed may show a desire to act contrary to the fundamental principles of the rules. We can say, however, that great care will be necessary in adhering to the new code for the first few weeks after the opening of navigation.

AS OUTLINED in our issue of the 21st inst., congress has annulled the president's proclamation regarding the revised code of steering and sailing rules, which were to go into effect on Friday, March 1. So from the present outlook the grand pow-wow indulged in by the delegates to the Washington International Marine Conference, is defunct in all of its bearings. How different was the action of lake seamen when brought to face the question of change in the rules, they knew what they wanted and they got it.

THE engineer officer in charge of the conservancy and improvements of rivers and harbors on Lake Superior, has taken a highly commendable step in providing for a concrete superstructure to the Marquette breakwater Pile driving is, after all, a pioneer, poverty-struck, and ancient construction. Let us now have commodious, well-equipped, sightly and permanent government works and improvements around our harbors.

CHICAGO is going ahead and taking the immense permanent obstructions known as center piers out of her river. What are the other principal lake ports doing in this direction?

A FEW NOTES ABOUT THE OUTLOOK.

Very seldom is lake trade at such a standstill as just now. Buyers of ore and coal for next season's delivery are independent and inclined to wait. The lumber outlook is fairly bright, but those who really think so are keeping their ideas to themselves, in the hope of reaping individual benefits. Even lumber production has been given a black eye by the present soft weather, but as March is apparently coming in like a lamb, lots of cold weather may yet be looked for.

The large areas of ice to be seen on almost every lake are pleasing sights to the owners, who think that great fields of solid ice are the best binder for a late opening agreement that can be procured.

Seventy-five cents from Lake Superior is still talked of as the contract ore rate next season. This is a drop of five cents from 1894, but with promises of limited production, and the enormous increase in the ore carrying tonnage that will come out next season, vessel men seem inclined to close at that rate if good port dispatch can be secured.

Bituminous coal presents some slightly improved features, growing out of the district combinations, and the prospect of harmony prevailing all over the lake producing districts. The Jackson miners are becoming an active factor in the river and east shore ports of Michigan, and a desperate effort is being made to stock these places well with Jackson coal delivered by a dirt cheap all-rail haul between Chicago and the Atlantic seaboards. Several boats have had such bad luck with grain as to offset all profits expected from winter storage.

The absorption of the Crescent Line by the Union Transit Co. is indicative of some improvement in package freight, and passenger lines are promised an exceptionally good season as offering opportunities for outing at rates which will be tempting to well-to-do people who still have to economize for another year.

PISTON FRACTURE OF THE GASCOGNE.

The recent accident to the machinery of the Atlantic Liner La Gascogne has caused a widespread interest to be evinced among marine engineers, and technical journals are now illustrating the engines, fracture, and means taken by the engineers to bring the ship to port.

Among the many diagrams the one published by *Safety Valve*, New York and Chicago, is perhaps the clearest, and we take pleasure in reproducing same from the columns of our valued contemporary, together with an interesting resume of the occurrence.

The piston broke as shown, therefore the middle set of tandem engines had to be disconnected from the others. The Gascogne now has a triple tandem quadruple-expansion engine. The set is composed of six cylinders—one high-pressure cylinder that carries 161 pounds, which is considered very low for a quadruple-expansion engine; two first intermediate cylinders, in which the pressure was 83 pounds; a second intermediate cylinder, in which the pressure was 40 pounds, and two low-pressure cylinders, in which it was 10½ pounds. The six made the three vertical tandems, as shown in the diagram.

The piston of the second intermediate cylinder broke in the middle and necessitated the disconnecting of the whole middle tandem from the rest of the engine. First steam had to be shut off. Then a blank flange had to be constructed in the first intermediate cylinder of the second tandem to allow the steam to pass from the high-pressure cylinder directly to the first intermediate cylinder of the third tandem. Temporary connections had then to be made from this first intermediate cylinder of the third tandem to the disabled second intermediate cylinder, through which the steam passed (as it would pass through a pipe, without operating anything), to the two low-pressure cylinders, which would then be fulfilling their duties as usual.

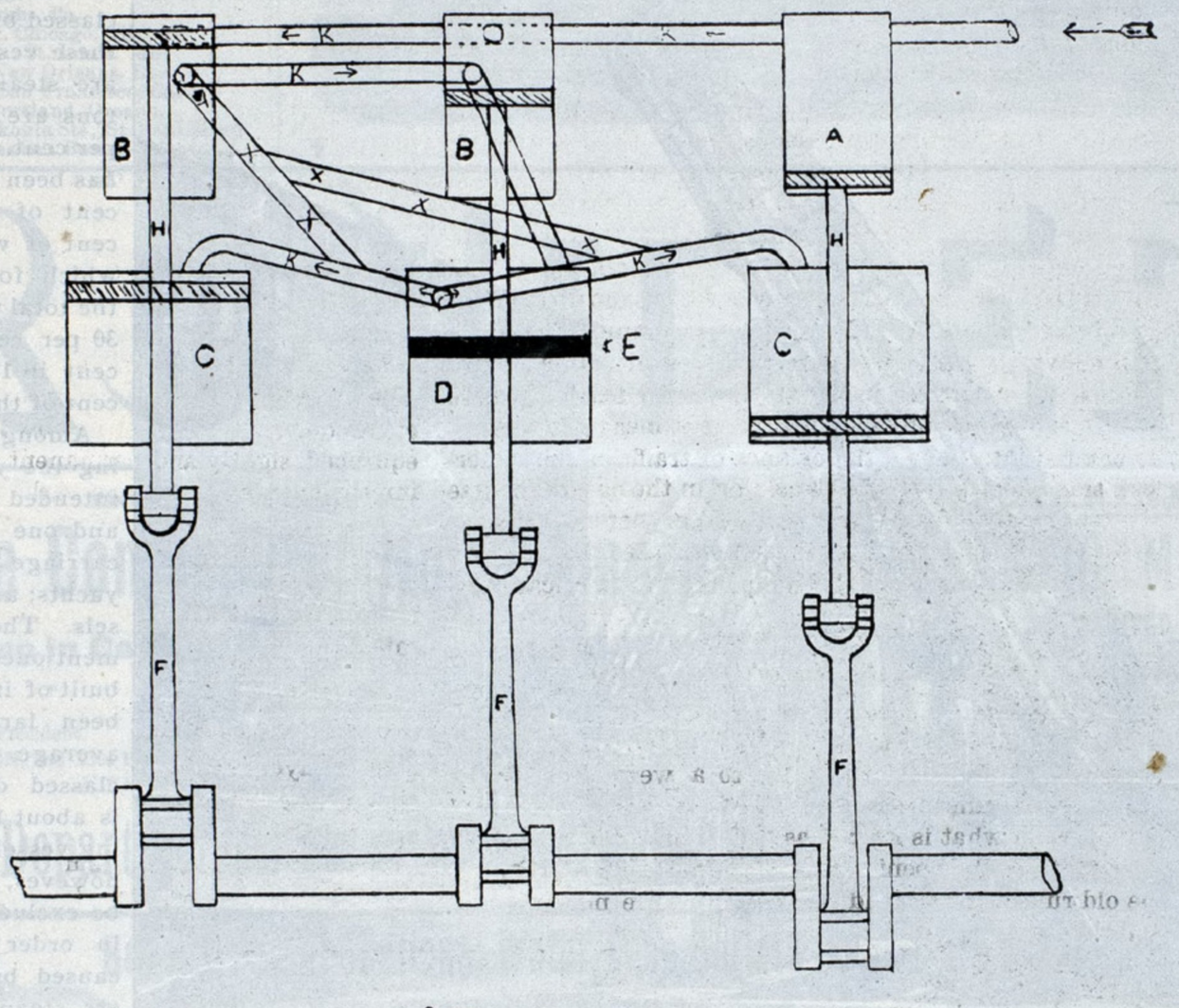

Diagram of La Gascognes Engines

A, High-pressure cylinder, 161 lbs.
B, B, Higher intermediate pressure cylinder, 83 lbs.
C, C, Low-pressure cylinders, 39 lbs., formerly 29 lbs.
D, Lower intermediate pressure cylinder, 10 lbs., formerly 29 lbs.
x x The temporary connections, although not strictly accurate, they show the connection between the lower intermediate, the second higher intermediate and the two low pressure cylinders.
E, Fractured piston.
F, Connecting rods.
H, Piston rods.
K, K, K, etc., Steam feed-pipes.

After the repairs the engine worked practically as a triple expansion engine, with only two cranks to turn the shaft and with one less air pump. Operating the shaft with only two cranks, pushed by the piston rods of the first and third tandems, caused the bearings of the two working cranks to become heated.

Much light has been thrown on the whole matter by M. Gonneville, a French government engineer, who has made a number of trips on the vessel. He says: "As she worked before, we took the steam directly from the boiler into the upper cylinders.

"Each cylinder received the steam simultaneously at a pressure of 83 lbs. Each of these cylinders exhausted directly into the low-pressure cylinder on which it stood, and which worked on the same piston rod with it. The pressure in each of the low-pressure cylinders was 29 lbs. Then a change was made, it being believed that by a different arrangement the power and speed could be increased. So the engine was changed to a quadruple expansion. To do this, the small cylinder toward the bow of the boat was taken as a high-pressure cylinder. It was greatly strengthened and fitted with a brand new piston and piston rod to stand the extra strain upon it. Under the new method this cylinder received the steam at a pressure of 161 lbs. to the square inch. It exhausted simultaneously into the two other upper cylinders, which acted as the first intermediate cylinders. These two cylinders received the steam at a pressure of 83 lbs., less than when the engines were working under the old compound method. The high-pressure cylinder was the only one that had been strengthened. The two intermediate cylinders exhausted directly into the large cylinder in the middle of the first tier, which is named the second intermediate. The steam was received here at a pressure of 39 lbs., where formerly it worked at only 29. The second intermediate cylinder exhausted into the low-pressure cylinders at either side, where the steam was received at a pressure of 10 lbs., 19 lbs. less than formerly. Now, it was the increase of pressure in the second intermediate cylinder that caused the trouble. Appreciating the risk of increasing the pressure in this cylinder from 29 lbs. to 39, a test was made before the ship left the dock. The engines behaved splendidly with a pressure of 45 lbs., in that cylinder, up to which point she was tested. We were running it at a pressure of 40 pounds, when it broke.

"When we discovered what was wrong, we cut this cylinder with the first intermediate above it out. The connection between the high-pressure and the first intermediate above the useless cylinder was cut. Then the steam exhausted only from the high-pressure into the first intermediate cylinder nearest the steam. The broken piston was pushed up to the cylinder head, so that the second intermediate cylinder simply acted as a reservoir for the steam from the first intermediate and distributed the steam into the low pressure cylinders. The result was that the engine was thrown out of balance, as it were. When the pressure in the second intermediate was removed, the working cylinders did too much work and ponnded at each stroke on the crank shaft. Consequently the bearings wore away, and we were compelled to lay to for forty hours while we made the changes.

"It has been stated that the loss of the work of one piston reduced our speed one-half. That is incorrect. When the engines were working all right they made sixty-one strokes."

BRANCH HYDROGRAPHIC OFFICE ENDORSED.

At a regular meeting of the Shipmasters' Association No. 2, held in Cleveland, on Friday last, the following preamble and resolutions were unanimously endorsed:

"Whereas, There has recently been established in Cleveland a branch hydrographic office, U. S. Navy Department, with Ensign W. C. Cole, U. S. N., in charge, whose aim has been to make the service give the greatest good to masters and owners, and

"Whereas, We as masters and owners are pleased to show that we recognize the importance of the work, and that the value of the same meets our highest appreciation, fully realizing that now and in the near future the increasing size of ships requires such accurate information relating to navigation of difficult channels and waterways as are furnished us from the branch hydrographic office; and

"Whereas, We realize that in assisting us in this manner, the hydrographic office has seen the needs of the growing commerce of the lakes, and the just demands for the same protection that has for years favored ocean and coast tonnage; therefore, be it

"Resolved, That we call the attention of our legislators in the senate and house of representatives to this work of the hydrographic office, and the benefits derived from the office located at this port; and we ask them to urge the Navy Department to establish branch hydrographic offices at each of the principal lake ports, and we hope congress will provide a sufficient appropriation to enable the Navy Department to do this, thereby conferring upon the maritime interests of the lakes valuable benefits; and be it further

"Resolved, That we unanimously commend our local hydrographic officer for his painstaking efforts to impart to us information beneficial and instructive; that in him we recognize an officer especially adapted to carry out to the letter the important information extended to us by the U. S. Navy Department; and that a copy of these resolutions be sent to Commander Charles D. Sigsbee, U. S. N., hydrographer, and to our local representatives in congress."

MORE ABOUT THE GILCHER WRECKAGE.

In response to a letter of inquiry written by THE MARINE RECORD to Capt. Lewis Ryerse, of St. Ignace, Mich., that gentleman has written the following reply:

ST. IGNACE, Feb. 24, 1895.

"In reply to your last letter of inquiry I would say that Mr. O'Brien tells me that the location where they first saw the Gilcher wreckage and picked up the relic was south-west from a point (not named) which extends some distance west from the main land about one and a half miles south of Fisherman's Island, on the north side of the entrance to Grand Traverse Bay. The wreckage was probably a mile from shore, and the next morning it was grounded on a reef extending west from the point above spoken of, where it remained for some days, finally breaking up with the sea and parts of it going into a boat harbor north of the point inside of Fisherman's Island, where O'Brien's fishing hut and boat dock was located. O'Brien tells me they had to shove the burned timbers out of the way to get the fish boat out, which they did with the wind off the land. This was the last they saw of the wreckage. His brother, George O'Brien, of Charlevoix, Mich., was fishing with him and was with him all of the time. O'Brien says there was a large lot of the wreckage when they first went on it, and that he noticed bolts sticking through the timbers where apparently other timbers had been burned away from them. I judge from O'Brien's description of the wreckage that the part to which the brass plate was attached was a piece of coaming from 25 to 40 feet long, with deck beams or carlins attached to it at right angles, and one or more stanchions above it, but bent over so they were near the water. O'Brien says that all the wreckage was badly burned as far as they could see it and that the pieces that came into the boat harbor were burned over all the visible surfaces. O'Brien did not discover or recognize the name at the time they picked it up and not until after reaching the shore. There are two cuts made in the brass evidently before it was burned. They seem to have been made with the corner of a hand axe."

THE small schooner Maggie Johnson owned by Capt. Frank Morris, of Kewanee, Mich., is having her spars and rigging taken off her and next spring when the ice moves out of the river the old weather beaten craft will be taken out into the lake and allowed to go to pieces upon the beach. The Johnson was built at White Lake, Mich., 20 years ago, and at one time was one of the smartest schooners on the lake.

THE VAN BUREN STREET ROLLING LIFT BRIDGE, CHICAGO.

(ILLUSTRATED.)

The new rolling lift bridge at Van Buren street, Chicago, was opened for traffic February 4, after about thirteen months spent upon its construction. The old bridge at this street was of the swing type, dividing the river into channels 55 feet wide on the west side of the center pier and 67 feet on the east side, and neither of these was in a direct line with the channel above and below the bridge. An improvement in the channels was needed to assist in the movement of shipping, and the change was hastened by the desire of the Metropolitan Elevated Railroad to cross the river. This could be done only by widening the clear channel at Van Buren street and by using bridges with no center piers. The plan agreed upon provides a clear, straight channel 108 feet wide from Adams street to a point south of Van Buren street. The Van Buren street bridge is in the foreground, the west half being raised, the Metropolitan bridge being shown in progress of construction. The end of the east half of the Van Buren street bridge is seen at the right. These structures are similar in appearance and general arrangement, but the highway bridge only will be described here.

This is a lift bridge which rolls upon a segment or rocker. The operating machinery is placed at the abutments and under the railway. The west approach is longer than the east, the abutment and pier on the west side being separated by 40 feet, in which space the machinery is located. On the east side the abutment and pier are combined in one piece of masonry, in a cavity in which the machinery for that side is placed. The machinery is in duplicate, each half of the bridge being entirely independent of the other.

The foundations are built upon piling driven at about three feet centers. The piles were about 50 feet long, and were driven nearly to the level of the water and sawed off 17 feet below the water line. Open caissons were used in building the masonry of the abutment and pier on the west side of the river and the pier portion of the east abutment. The bottoms of these consisted of four courses of 12 by 12 inch pine, and the side walls of a single course. The caissons were built at the dock, and after being filled with concrete until they were sunk nearly to the level of the piling, they were towed into position and the concrete was built up to a level two feet below the water line. Then the pier was faced up with Bedford masonry to the coping which is of large blocks of Bedford stone. The concrete backing for each course of masonry was added.

Compressed air is used for operating the roadway gates and for boat signals. The latter is similar in form and operation to a high target railroad switch stand, and gives indications to the boatmen or passengers upon the street, which are similar to those given by a switch target. Red and green electric lights are shown at night.

The bridge was designed and patented by Mr. William Scherzer. The substructure was built by the Fitz Simmons & Connell Co., of Chicago. The east pier and abutment, which was located between two seven-story buildings, and the excavation for which was considerably below the foundations of these buildings was difficult work and was done successfully and is very creditable to the contractors. The contract for the superstructure was awarded to Mr. Charles L. Strobel, of Chicago. The bridge work was let by Mr. Strobel to the Elmira Bridge Co., of Elmira, N. Y., who sublet that for the machinery to the Scaife Foundry and Machine Co., of Pittsburgh. The electrical equipment, brakes, air compressor, gates, signals, lights and bell were put in by G. P. Nichols & Bro., of Chicago, the arrangement of signal and compressed air system being designed by Mr. George P. Nichols. The construction of the bridge was under the supervision of Mr. Samuel G. Artingstall, municipal engineer. The total cost of the bridge including complete equipment was $169,700.

We are indebted to the *Railway Review*, Chicago, for the accompanying illustration and descriptive matter.

A CHICAGO ROLLING LIFT BRIDGE.

BRITISH SHIPBUILDING RETURNS FOR 1894.

The total addition of steam tonnage to the British mercantile marine during the year 1894, has been 811,859 tons gross; and, of sailing tonnage, 109,884 tons gross; or, in all, 921,743 tons gross. Nearly 93 per cent. of this addition consists of new vessels, not any of which have been built abroad. The largest items among the other additions are those of vessels bought from foreign owners, and vessels transferred from the colonies. These together amount to 52,880 tons, or under six per cent. of the total addition.

The gross deduction of steam tonnage amounts to 416,385 tons; and, of sailing tonnage, to 153,619 tons; or, in all, to 570,004 tons gross. About 53 per cent. of the steam tonnage, and 55 per cent. of the sailing tonnage, included in these figures, has been removed on account of loss, breaking up, dismantling, etc. It should be noted that in the returns of the Registrar-General of Shipping, wrecks, etc., are included according to the months in which they were respectively reported to him, and not according to the months in which they occurred. The Wreck Returns which are published quarterly by Lloyd's Register, show the losses that actually occurred within the period to which they refer.

The tonnage sold to foreigners exceeds this year even the exceptionally high figure reached in 1893. The steam tonnage which has been deducted on this account, amounts to no less than 184,270 tons, and the sailing tonnage to 67,895 tons, or about 44 per cent. of the total deduction in each case. Japan has been the largest purchaser, that country having acquired from the United Kingdom 24 steamers of 61,912 tons. Among other principal purchasers may be mentioned Norway, 40,721 tons; Italy, 24,717 tons; France, 20,546 tons; Spain, 20,297 tons; Denmark, 14,931 tons; Germany, 12,539 tons, and Holland, 10,542 tons. In addition to these sales to foreigners, 9,046 tons have been transferred to the British colonies. It will be understood that new vessels built in the United Kingdom for colonial and foreign owners are not included in these returns, as such vessels are not put on the official register.

On the whole, during 1894, the steamers on the Official Register of the United Kingdom have increased by 186 vessels, and 395,474 tons, while sailing vessels have decreased by 295 vessels, and 43,735 tons. The total number of vessels on the register has therefore decreased by 109, and the total tonnage has increased by 351,739 tons during the year.

In this connection, it may be added that the vessels on the Register of the United Kingdom on the 31st of December, 1894, were approximately as follows:

Steam,	8,274 vessels of	9,673,339	tons gross.
Sailing,	12,944 "	3,157,882	" "
Total,	21,218 "	12,831,221	" "

During 1894, 518 new vessels of 907,101 tons, including about 88 per cent. of the total output, excluding war vessels, of the United Kingdom, have been classed by Lloyd's Register. Of these vessels, 447 of 816,307 tons are steamers, and 71 of 90,794 tons are sailing vessels. 98.54 per cent. of the tonnage classed has been built of steel; 1.15 per cent of iron; and only .31 per cent of wood. Sailing tonnage which formed 25 per cent of the total tonnage classed in 1891, 30 per cent in 1892, and 18 per cent in 1893, forms only 10 per cent of the present total.

Among the vessels classed during the year are four steamers intended for the carriage of oil, and one sailing vessel for the carriage of tar, in bulk; 24 yachts; and 75 steam fishing vessels. The majority of the last mentioned vessels have been built of iron, but steel has also been largely employed. The average size of the steamers classed during the past year is about 1,826 tons, and of sailing vessels about 1,279 tons. If, however, vessels under 200 tons be excluded from the average, in order to avoid diminution caused by yachts, small coasters, steam trawlers, etc., the figures stand as follows: Steam, 2,219; sail, 1,816.

During 1894, 19 steamers of over 5,000 tons each have been classed, as compared with 12 during 1893; but, while nine sailing vessels of over 2,500 tons each were classed in 1893, only two have been classed in the year under review. The largest steamers classed during 1894, are the "Kensington," of 8,669 tons, and the "Caledonia," of 7,558 tons; the largest sailing vessel is the "Pitlochry," of 3,111 tons.

BAKER'S PATENT MAST RING.

The Watertown Brass and Manufacturing Co., of Watertown, N. Y., are now placing on the market a new mast hoop having for its principal merit the fact that it can not bind on the mast, a feature which is so customary and annoying in the common or old-fashioned hoop. Since the introduction last season of the Baker patent mast ring for medium sized fore and aft tonnage, the demand for same has grown so large that the manufacturers adapted the patent for heavier work, and they are now prepared to furnish this ring or mast hoop for all classes of sailing craft, and they state that after once using the Baker patent the old mast hoop is invariably discarded.

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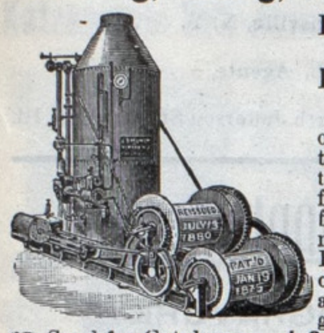

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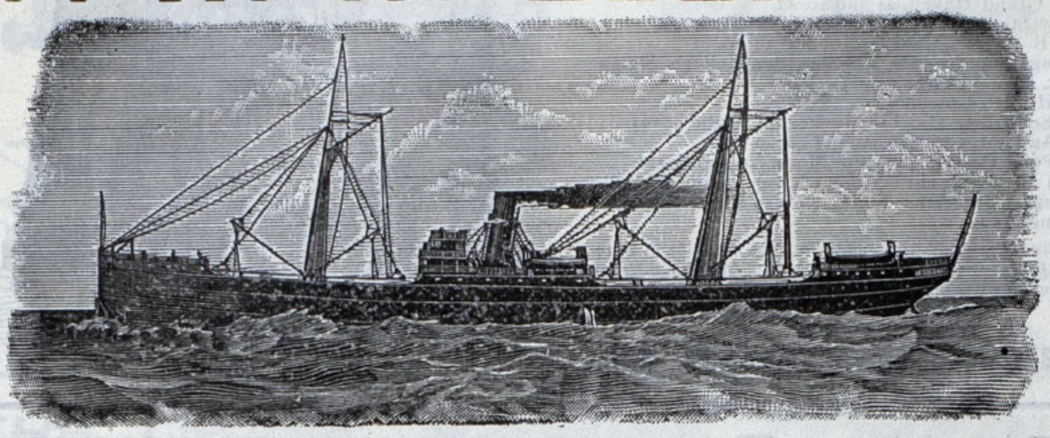

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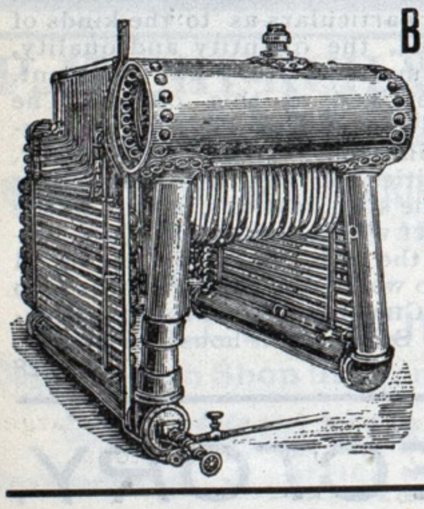

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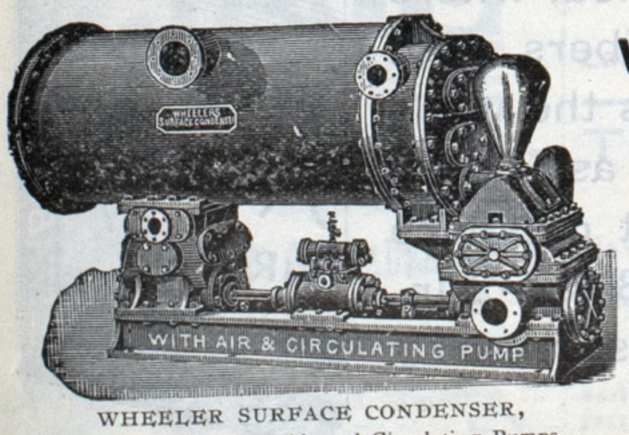

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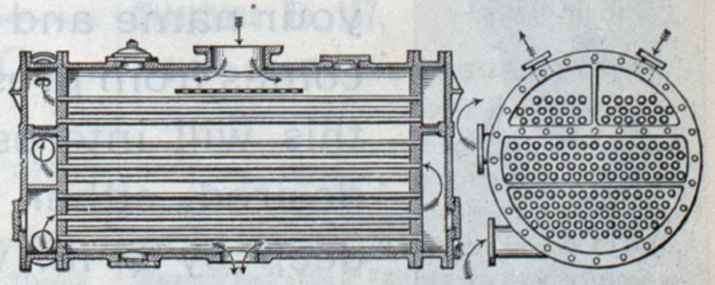

PATENT COMBINED SURFACE CONDENSER AND FEED-WATER HEATER.

PROPOSALS.

U. S. ENGINEER'S OFFICE, Duluth, Minn., January 28, 1895. Sealed proposals for furnishing cement, broken stone, sand, iron and timber for concrete superstructure to breakwater at Marquette, Mich., will be received here until 12 m. February 28, 1895, and then publicly opened. Further information furnished upon application. CLINTON B. SEARS, Maj. Engineers. 9-B

OFFICE OF LIGHT-HOUSE ENGINEER, 9th and 11th Districts, Detroit, Mich., Feb. 11, 1895. Sealed proposals will be received at this office until 3 o'clock p. m. on Saturday, the 2d day of March, 1895, for furnishing the boilers for ten steam fog signals, in sets of two, delivered at the Light-House Depot at Detroit, Michigan. Plans, specifications, forms of proposal and other information may be obtained on application to the undersigned. The right is reserved to reject any or all bids and to waive any defects. M. B. ADAMS, Major, Corps of Engineers, U. S. A., Light-House Engineer. 7-9

U. S. ENGINEER OFFICE, Newport, R. I. February 9, 1895. Sealed proposals, in triplicate, for dredging on Green Jacket Shoal, Providence Harbor, R. I., in Taunton River, and in Hyannis, Edgartown and New Bedford Harbors, and Canapitsit Channel, Mass., and for removing ledge rock in Pawtucket River, R. I., will be received here until 12 o'clock, noon, March 20, 1895, and then opened. Full information furnished on application. W. H. BIXBY, Capt., Corps of Engineers, U. S. A. 8-11

OFFICE OF LIGHT-HOUSE INSPECTOR.—Tenth District, Buffalo, N. Y., February 11, 1895. Proposals will be received at this office until 12 o'clock m., on Thursday, the 28th day of February, 1895, for maintaining all the Buoys now in the Niagara River, New York, and at Waverly Shoal, Lake Erie, and such others as may be authorized, for one year, from the first day of July next. Forms of proposals and printed specifications, showing what is required, can be had by applying to this office. The right is reserved to reject any or all bids, and to waive any defects. CHARLES V. GRIDLEY, Commander U. S. N., Light-House Inspector. 28

OFFICE OF LIGHT-HOUSE INSPECTOR, Tenth District, Buffalo, N. Y., February 11th, 1895. Proposals will be received at this office until 12 o'clock m., on Thursday, the 28th day of February, 1895, for furnishing and delivering provisions for Vessels and Light-Stations in this district. Forms of proposals and printed instructions giving full particulars as to the articles required, and the terms of delivery and payment, can be obtained at this office. The right is reserved to reject the whole or part of any or all bids, and to waive any defects. The United States reserves the right to increase or diminish (not to exceed one-third) during the fiscal year, the quantities of any item or article named in the Specifications, and a clause to that effect will be inserted in the contract. CHARLES V. GRIDLEY, Commander, U. S. N., Light-House Inspector. 28

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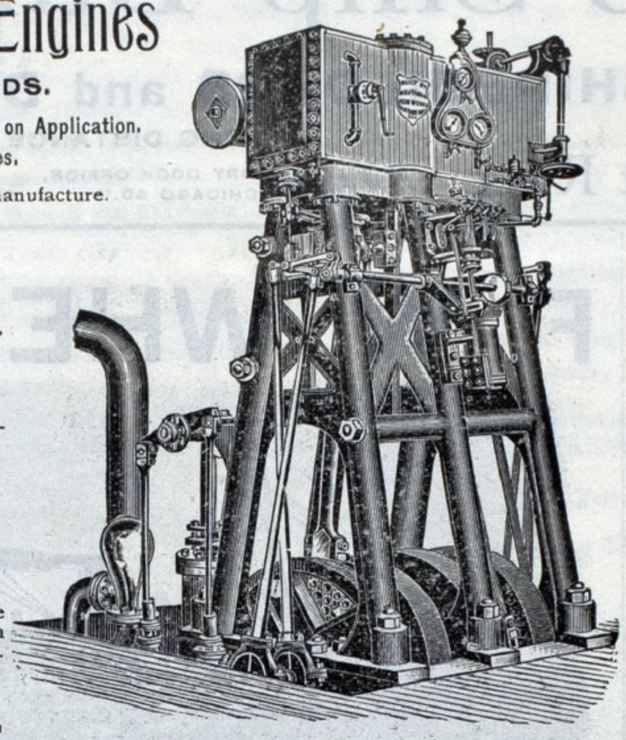

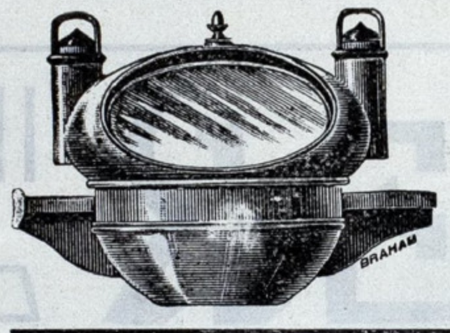

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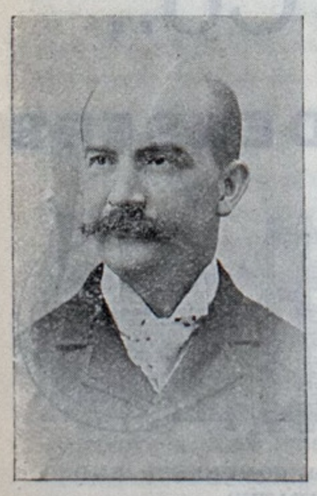

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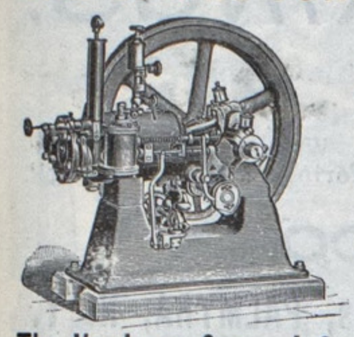

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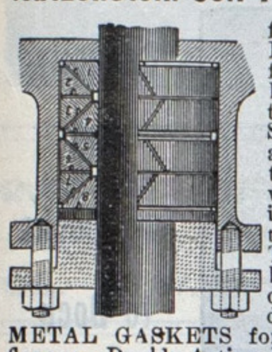

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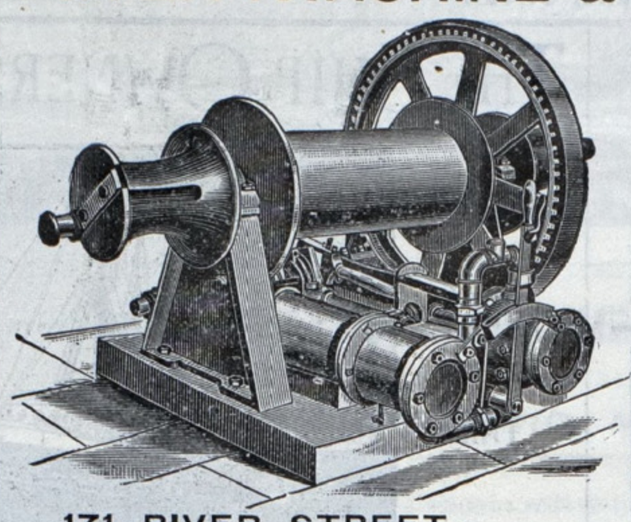

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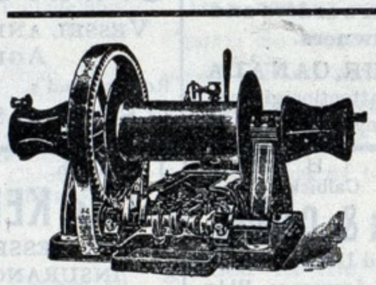

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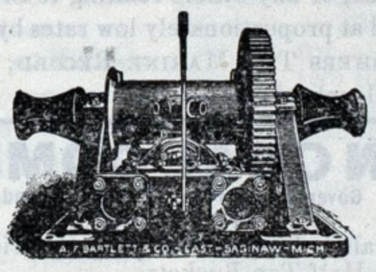

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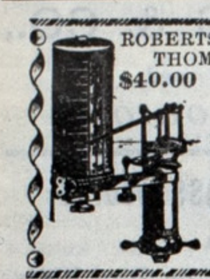

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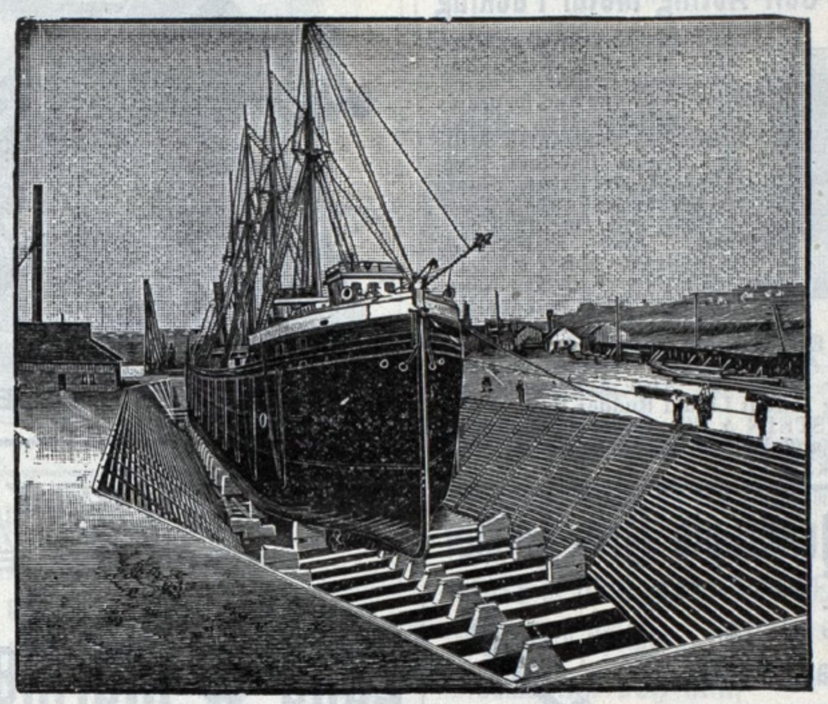

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